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**A process for the preventive and/or current display of transmission costs in the case of transmissions of Internet and on-line data**

The invention relates to a process for the preventive and/or current display of transmission costs in the case of transmissions of Internet and on-line data from a services/information provider to a subscriber in accordance with the over-arching concept of patent claim 1.

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The basic application possibilities for Internet operation, with the pertinent protocol structures, are sufficiently well known. Accordingly, the most common applications consist of looking at (so-called browsing) of Internet pages, which are written in hypertext markup language, HTML, for example, and are loaded into the user's machine, a personal computer, PC, for example, via hypertext transfer protocol, HTTP over the Internet, which is based upon TCP/IP as a transport protocol. This is probably the most common application. The software requirement for Internet operation that is imposed upon the user is the presence of a so-called browser, as a rule.

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Next, as an additional point of emphasis, comes the possibility of transferring wide-ranging files of arbitrary content. These files are transferred, for example, by means of a File Transfer Protocol, FTP, in which a frequent application may be found, for example, in the so-called downloading of new software releases for the PC field. Here, very long transmission times can sometimes occur if it is a matter of large amounts of data in combination with slow Internet connections.

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Another point of emphasis is the transmission of electronic mail, the so-called E-mails, for example, by means of Simple Mail Transfer Protocol, SMTP, in which case, the matter in hand, preferably, is quite small quantities of data, which can, however, be supplemented by attachments. These attachments, then, are frequently files with text, data, or pictures, though here, once again, large amounts of data can be involved.

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The usual method of proceeding, which has been introduced in the Federal Republic of Germany, at least, for Internet access or on-line access, consists of the fact that the subscriber, with his PC, is connected via a telecommunications network, such as the ISDN network, for example. With the latter, he creates a dial-up connection to the appropriate Internet Access  
5 Provider (IAP). After that, he avails himself of either the IAP's offerings, which provides, if applicable, services of its own, such as weather forecasts, discussion forums, offers of goods for sale in conjunction with partner firms, etc. (IAP is, simultaneously, the on-line SP or ISP), or he uses the IAP as a transition to the Internet Service Providers, ISP's, who are connected to the Internet worldwide. As a rule, however, this communication occurs only if the subscriber has a  
10 contractual relationship with both a telecommunications firm (Telco) as IAP access, as well as an additional contractual relationship with an IAP, which can, according to the example that was cited above, itself, be an ISP.

The structure of the transmission costs is correspondingly complicated. As a rule, it is comprised  
15 of monthly basic fees for both providers (Telco and IAP), as well as of connection-specific current costs for the individual session. Additional costs, which are covered by a separate bill, billed to a credit card or, in some cases, such as T-online, for example, covered by the telephone bill by means of special contractual relationships between ISP and provider, accrue for those  
20 availing themselves of any ISP services.

The problem associated with proceeding in this manner consists, in particular, of the fact that the subscriber, until such time as the ex post facto monthly telephone bill arrives, has no clue at all  
as to the costs he has incurred with his Internet access. The only indication he possesses at present is the optional indication of file size, which is displayed in the FTP download procedure  
25 by many ISP's. With this information, for example, the customer can calculate his telephone company's transmission costs, as well as his IAP's costs per session himself, before demanding the data as a download.

However, this process is not altogether trivial. First of all, the customer must know his telephone  
30 line's data transmission speed and that of his terminal adapter or modem, as well as the protocol overhead of the Internet and application protocols, more or less. Then he calculates the required

transmission time and after that, while bearing the individual, complex rate structures in mind, the Telco and IAP costs associated with them. When proceeding in this manner, there is not much cause for joy, particularly since the rate of transmission, for reasons having to do with network or server overload at any arbitrary point in the complete connection, as well as in the case of a bad telephone line with frequent automatic repetitions, can experience additional delays.

In the case of the current networks, which are line-supported, both the Telco and the IAP calculate the duration of the session, in terms of time, regardless of how much data is transferred in this time or regardless of how long the customer who is inclined to do so requires for any calculation of his costs he might undertake.

Volume pricing on the part of the Telco, instead of time-based pricing, would change nothing, in principle, since this stretch represents just a portion of the transmission, and the remote ISP, in the case of its informational offer, which is created for worldwide access, cannot address specific Telco-related concerns of individual subscribers, and thus, presumably for the future as well, it will display only the quantity of data [transferred], and only in the case of an FTP transfer, if at all.

Therefore, an improvement of the situation by means of the introduction of a suitable process is necessary.

It is the underlying task of the present invention to propose a process on the basis of which the Internet or on-line subscriber, prior to any pending transmission of at least large quantities of data, can be supplied with information concerning the transmission costs as a current and/or preventive measure, regardless of the transmission method that is used.

The characteristic features of patent claim 1 meet this task.

The essential characteristic of the invention is that prior to any pending transmission of data, the service/information provider transmits an additional protocol element (the price element), containing an indication of the data volume that is pending, to the subscriber (recipient), such that the protocol element, as such, is acknowledged by the transit nodes that are involved in the

transmission and/or by the telecommunications networks, and the protocol element is ultimately evaluated in the recipient's terminal unit, and a read-out of the sum total of pending transmission costs is displayed.

- 5 According to the invention, the advantage is achieved by virtue of the fact that the subscriber has, at all times, control over the transmission costs that have been incurred and those that will yet be incurred i.e. the actual total costs that are incurred with transmission.

- 10 The protocol element can, to good advantage, contain additional price-relevant criteria from the service/information provider, such as, for example, quality of service, transmission priority, routing instructions, price group, contractual information, security classifications, sender's details, etc.

- 15 The evaluation of the cost data contained within the protocol element by the terminal unit is simple. In a preferred application, this can occur by means of particular options in the browser software that is used, which the protocol acknowledges as such, which perform the corresponding calculations and display the result.

- 20 An extension of the invention makes provision for the fact that the browser software causes an additional menu (ME), with alternative menu points to be displayed, by virtue of which the subscriber can institute the transmission of the software or, alternatively, reject it. This can be achieved by corresponding information fields in a page of offerings that is transferred by the service or information provider and displayed at the terminal unit. Furthermore, the menu can offer, as options, additional menu points that initialize additional activities at the end unit, such as, for example, creating a later automatic connection to the service provider with the institution of the data transmission in question at a more favorable time, from the perspective of costs.

- 30 Another extension provides for the introduction of a particular protocol element, which is transferred to the terminal user's machine prior to any transfer of data at all, thus, for example, a HTML page to the terminal unit, thus rendering it possible for the user to elect whether he would like to receive these data or not. This measure serves, in particular, as a protective mechanism for

rapid Internet access on the part of the user, where, for example, a wide range of HTML pages that are expanded with picture elements are sent even before the user can react and disrupt the data transfer in any concerted way.

- 5 In this regard, provision is made so that an individual, user-specific limitation on data or costs can be programmed by the user, beneath which the automatic delivery of data occurs, in which the user's terminal unit automatically confirms all transfer requirements.

- 10 In an alternative type of embodiment, provision is made so that a data or cost limit that is set by the subscriber is automatically transmitted to the service/information provider, after which the services/information provider, for his part, automatically asks for user confirmation/denial of the pending transfer above this limit.

- 15 Furthermore, a particular protocol element can be introduced for all current data transfers, and it can be sent along with every transmission of data, as a result of which, especially in the case of transmission networks that are charged by volume, a clear, current overview of costs is rendered possible.

- 20 In what follows, using figures in the drawing that here describe just one possible embodiment type by virtue of the example of an Internet transmission and a personal computer (PC) as a terminal unit, the invention is elucidated, such that by virtue of the drawing figures, additional features, areas of application, and advantages of the invention result.

- Figure 1 shows a representation of a typical Internet connection;  
25 Figure 2 shows a representation of an Internet connection with an expansion for a preventive cost display according to the invention.

- Figure 1 shows, schematically, an Internet connection and the components that are involved in constituting it. A subscriber having, for example, a PC as terminal unit 1 is connected to a  
30 telecommunication network 3 by way of a modem 2. The transition to the Internet access provider 4, which creates the connection to the worldwide Internet 5, exists here. In this

example, the subscriber communicates with a remote service provider 6 (ISP: Internet Service Provider), who makes a certain offer, an Internet page 7, for example, and transmits it to terminal unit 1 where this page is represented on the display 8. In reality, a service provider 6 often does not make all offers directly, but rather, in a manner comparable to stretch 1-3, creates a  
5 connection to so-called host computers of outside firms, which, for their part, use the service provider as an Internet access provider. In the present mode of observation, however, this circumstance is not critical, and, for purposes of simplification, it was not depicted.

The transmission of the contents, here page 7, occurs here by means of an end-to-end protocol,  
10 so that the content for the transit provision node (router) cannot be seen.

For that reason, support of a cost display on the part of the network is, in principle, not possible.

Therefore, the present invention takes another route. According to Figure 2, an additional  
15 protocol element 9, which can recognize the transit nodes that are involved in the transmission (components or network elements) 5, 4, and 3, is sent by the service provider 6 with each offer of transmission. This protocol element 9 contains identifying characteristics pertaining to the data to be transmitted, such as indications regarding the size of the quantity of data to be transmitted, any additional costs that might be incurred, and other characteristics, such as, for example,  
20 quality of service, priority of transmission, sender recognition, price categories, routing instructions, etc.

All transit nodes 5, 4 and 3 that are involved in the transmission recognize protocol element 9, and, after the corresponding calculation, they add their own transmission costs, which are  
25 incurred to protocol element 9 if necessary, as a result of which, the latter is constantly expanded, and they send protocol element 9 to the next node. In this way, the protocol element collects all relevant constituent costs of the pending transfer on its journey to the subscriber's terminal unit 1. In the subscriber's terminal unit 1, the installed Internet browser recognizes protocol element 9 and brings this to display 8 such that, if needed, a subsequent treatment of the  
30 data, such as a summation of the constituent costs, is undertaken for the sake of a better display.

The price information is displayed on the screen of terminal unit 1 by selecting and activating a corresponding field (pull-down or pop-up menu or a separate display window), or, alternatively, displayed directly. The displayed screen page, in the last instance with this method no longer corresponds to the original page 8, but is expanded, rather, in those cases in which the method according to the invention is contained proportionally within terminal unit 1, by the display of the data of protocol element 9.

As an option, additional menu elements 10 (ME) can be displayed, elements that activate different transfer options, such as the induction of a direct transmission, the disruption of the transmission, a subsequent, more cost-effective automatic transfer, for example, in POP operation (terminal unit 1 automatically induces the connection), or, in PUSH operation (service provider 6 automatically induces the connection), or, for example, an interim solution with immediate transmission to service provider 6 with temporary intermediate storage and subsequent transmission via the telecommunications network 3.

Furthermore, the introduction of a standard protocol element for all pending data transmissions, even HTML pages, for example, makes sense as an option which, especially in the case of rapid Internet accesses, such as 2 Mbps connections for instance, affords protection from the senseless delivery of large numbers of illustrated pages, for it is precisely here that high costs are caused by the high transmission band width that is available by virtue of the fact that the user can no longer disrupt a senseless transmission with a great scope of data in a timely manner before it was completed.

An individually programmable transmission limit, imposed by the user, renders the automatic delivery of all quantities of data that lie beneath that limit possible, and, from the prescribed limit onward, it leads to the requisite approval before the data is transmitted.

As an option, the introduction of an additional standard protocol element for all current data transfers makes sense, as a result of which a clear assignment of current costs to all transferred data is assured, especially in the case of volume-based billing within the telecommunications network.